

1 **1. A telecommunications network comprising:**

2 a first SONET/SDH ring that comprises a first plurality of nodes, wherein said first
3 SONET/SDH ring defines a first address space and wherein each of said first plurality of nodes is
4 identified by a unique address in said first address space; and

5 a second SONET/SDH ring that comprises a second plurality of nodes, wherein second
6 SONET/SDH ring defines a second address space and wherein each of said second plurality of nodes
7 is identified by a unique address in said second address space;

8 wherein there are at least two nodes that have an address in the address space of said first
9 SONET/SDH ring and an address in the address space of said second SONET/SDH ring.

1 **2. The telecommunications network of claim 1 further comprising an optical fiber that carries**
2 **a first STS-N that comprises:**

3 (1) a second STS-1 that is associated with said first SONET/SDH ring, and

4 (2) a third STS-1 that is associated with said second SONET/SDH ring.

1 **3. The telecommunications network of claim 1 further comprising an optical fiber that carries**
2 **a first STS-N that comprises:**

3 (1) a first automatic protection switching channel that is associated with said first
4 SONET/SDH ring, and

5 (2) a second automatic protection switching channel that is associated with said second
6 SONET/SDH ring.

1 **4. The telecommunications network of claim 1 further comprising an optical fiber that carries**
2 **a first STS-N that comprises:**

3 (1) the K_1 and K_2 line overhead bytes that are associated with said first SONET/SDH ring, and

4 (2) the K_1 and K_2 line overhead bytes that are associated with said second SONET/SDH ring.

1 **5. A telecommunications network comprising:**

2 a first SONET/SDH ring; and

3 a second SONET/SDH ring;

4 an optical fiber that carries:

5 (1) a first STS-1 that is associated with said first SONET/SDH ring, and

6 (2) a second STS-1 that is associated with said second SONET/SDH ring.

1 **6. A telecommunications network comprising:**

2 a first SONET/SDH ring; and

3 a second SONET/SDH ring;

4 an optical fiber that carries:

5 (1) a first automatic protection switching channel that is associated with said first
6 SONET/SDH ring, and

7 (2) a second automatic protection switching channel that is associated with said second
8 SONET/SDH ring.

1 7. A telecommunications network comprising:

2 a first SONET/SDH ring; and

3 a second SONET/SDH ring;

4 an optical fiber that carries:

5 (1) the K_1 and K_2 line overhead bytes that are associated with said first SONET/SDH ring,
6 and

7 (2) the K_1 and K_2 line overhead bytes that are associated with said second SONET/SDH
8 ring.

1 8. A system comprising:

2 a first optical fiber that is associated with a first SONET/SDH ring;

3 a second optical fiber that is associated with a second SONET/SDH ring;

4 a third optical fiber;

5 a fourth optical fiber that is associated with said first SONET/SDH ring;

6 a fifth optical fiber that is associated with said second SONET/SDH ring;

7 a first SONET/SDH node for receiving a first STS-N from said first optical fiber, for receiving
8 a second STS-N from said second optical fiber, and for transmitting said first STS-N and said second
9 STS-N via said third optical fiber; and

10 a second SONET/SDH node for receiving said first STS-N and said second STS-N from said
11 third optical fiber, for transmitting said first STS-N via said fourth optical fiber, and for transmitting
12 said second STS-N via said fifth optical fiber.

1 9. The system of claim 8 wherein said third optical fiber carries automatic protection
2 switching signaling for both said first SONET/SDH ring and said second SONET/SDH ring.

1 10. A SONET/SDH node comprising:

2 a first input port for receiving a first automatic protection switching channel from a first
3 optical fiber that is associated with a first SONET/SDH ring;

4 a second input port for receiving a second automatic protection switching channel from a
5 second optical fiber that is associated with a second SONET/SDH ring;
6 a multiplexor for multiplexing said first automatic protection switching channel and said
7 second automatic protection switching channel into one STS-N frame; and
8 a output port for transmitting said STS-N frame via a third optical fiber.

1 **11. A SONET/SDH node comprising:**

2 an input port for receiving a STS-N frame from a first optical fiber;
3 a demultiplexor for demultiplexing a portion of first automatic protection switching channel
4 that is associated with a first SONET/SDH ring and a portion of second automatic protection
5 switching channel that is associated with a second SONET/SDH ring from said STS-N frame;
6 a first output port for transmitting said portion of first automatic protection switching channel
7 via a second optical fiber that is associated with said first SONET/SDH ring; and
8 a second output port for transmitting said portion of second automatic protection switching
9 channel via a third optical fiber that is associated with said second SONET/SDH ring.

1 **12. A method of operating a time-division multiplexed telecommunications system, said**
2 **method comprising:**

3 receiving a first optical carrier signal that comprises a first source address and a first
4 destination address in a first address space;
5 receiving a second optical carrier signal that comprises a first source address and a first
6 destination address in a second address space;
7 multiplexing said first optical carrier signal and said second optical carrier signal into a frame;
8 and
9 transmitting said frame;
10 wherein said first optical carrier signal in said frame comprises a second source address and a
11 second destination address in said first address space; and
12 wherein said second optical carrier signal in said frame comprises a second source address and
13 a second destination address in said second address space.

1 **13. The method of claim 12 further comprising:**

2 receiving said frame;
3 demultiplexing said first optical carrier signal and said second optical carrier signal from said
4 frame;

transmitting said first optical carrier signal, wherein said first optical carrier signal as transmitted comprises a third source address and a third destination address in said first address space; and

transmitting said second optical carrier signal, wherein said second optical carrier signal as transmitted comprises a fourth source address and a fourth destination address in said second address space.

14. A method of operating a time-division multiplexed telecommunications system, said method comprising:

receiving a frame that comprises (1) a first optical carrier signal that comprises a first source address and a first destination address in a first address space, and (2) a second optical carrier signal that comprises a first source address and a first destination address in a second address space;

demultiplexing said first optical carrier signal and said second optical carrier signal from said frame;

transmitting said first optical carrier signal, wherein said first optical carrier signal as transmitted comprises a second source address and a second destination address in said first address space; and

transmitting said second optical carrier signal, wherein said second optical carrier signal as transmitted comprises a second source address and a second destination address in said second address space.

15. The method of claim 14 further comprising:

receiving a first optical carrier signal that comprises a third source address and a third destination address in a first address space;

receiving a second optical carrier signal that comprises a fourth source address and a fourth destination address in a second address space;

multiplexing said first optical carrier signal and said second optical carrier signal into said frame; and

transmitting said frame;

wherein said first optical carrier signal in said frame comprises said first source address and said first destination address in said first address space; and

wherein said second optical carrier signal in said frame comprises said first source address and said first destination address in said second address space.